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ABSTRACT

A study is presented of 67 first-time, low-income fathers' perceptions of their knowledge of the development and care of infants. Pregnant women from a low-risk and a high-risk pregnancy clinic helped to recruit their male partners into a prenatal program. The men were randomly assigned either to a control or experimental group. Interviews and measures provided data on family background, father attitudes toward infants, father perception of infants, father knowledge of when certain infant behaviors could be expected to occur, couple dyadic adjustment, father social support, and father self-image. The experimental group received two 1.5 hour sessions which provided information about the behavioral capacities of the unborn or newborn, and of infants in their first months. Fathers were videotaped postnatally with their infants during a feeding interaction. Scores of the experimental group on posttests of their knowledge of infants were significantly higher than those of the comparison group. A list of 52 references is included. (RJC)

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EFFECTS OF A PRENATAL 'INFORMATION AND INSIGHTS ABOUT INFANTS' PROGRAM ON THE KNOWLEDGE BASE OF FIRST-TIME-LOW-EDUCATION FATHERS ONE MONTH POSTNATALLY

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Running Head: EFFECTS OF PRENATAL INFORMATION SUPPORT

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Abstract

Pregnant women, in two clinics, one serving "low-risk" and the other serving "high risk" pregnancies, helped to recruit their male partners into a prenatal program. The 67 men, first-time fathers, all of low socio-economic status, were randomly assigned either to a control group or to an experimental group. The intervention group received two intensive 1 1/2 sessions of information and insights about infants in a small group within a clinic setting.

Father interviews and measures provided data on family parenting background; father attitudes towards infants; father perception of infants; father knowledge of when certain infant behaviors could be expected, couple dyadic adjustment, father social support, and father self-image. Postnatally fathers were videotaped with their infants during a feeding interaction. During the training sessions, detailed information about the behavioral capacities of the unborn/newborn and of infants during the first months of life were provided. Post test knowledge of infant scores of the experimental group were significantly higher ($p = .0001$) than those of the comparison group.

EFFECTS OF A PRENATAL 'INFORMATION AND INSIGHTS ABOUT INFANTS' PROGRAM ON THE KNOWLEDGE BASE OF FIRST-TIME-LOW-EDUCATION FATHERS ONE MONTH POSTNATALLY

Over the past decade the possibility of influencing parent-infant relations in the opening days of life has captured the imagination of service providers. They are interested in providing information support (Arbuckle, 1984; Belsky, 1985; Cameron, 1979; Cronenwett, 1984; Cronenwett and Wilson, 1981; Gearing, 1980; Helfer, 1979; Meyers, 1982; Panabecker, Emde & Austin, 1982; Parke, Hymel, Power & Tinsley, 1980; Resnick, Resnick, Packer & Wilson, 1980; Swendsen, Meleis & Jones, 1976;

Theoretically, House (1981) defines information support as "Provision of information which the person can use in coping with personal and environmental problems" (p. 24-25). Operationally, when applied to fathers, it is defined as "the number of fathering tips the man has received from professionals, friends, or relatives in the previous month" (p.24-25).

In their work on educational support to parents, Sparling and Lewis (1980), emphasize the fact that information can play an important role in the area of human services. First, it is inexpensive compared to other services. Large numbers of parents can be reached through information that can be repeated many times. Second, information is flexible

and can be presented using varying modalities to communicate the same message. Third, it preserves the autonomy of the receiver--it is not coercive; it can be ignored or heeded. Unlike some other forms of social services, information may be used before problems occur. Thus it can be thought of as a preventive service.

The transition to parenthood is viewed as one period in which preventive services are desirable. That the change from the childless to the childbearing and childrearing state is one of the most radical life style shifts a person can make is a factor seriously weighed by providers of information support (Wilson, 1984). In recent years there has been a recognition of the changing patterns of social support available to families.

In view of the potential role that fathers can play in fetal and newborn development and in the light of current trends toward greater father involvement, it is important to examine the father's expressed need for information support as well as the adequacy of information support systems which are available to fathers.

Fathers who were experiencing the transition to parenthood themselves identified the need for information on infant care skills as their major concern (Obrzut, 1976). A group of studies conclude that preparation for parenthood by the father is desirable and even necessary (Dyer, 1963; Heise, 1975; LeMasters, 1957; Treat, 1964).

Many new parents face the responsibilities of parenthood with a personal background ill-suited to providing responsive care to their new baby (Belsky, 1985; Belsky & Benn, 1982; Boger & Kurnetz, 1985; Boger, Richter & Weatherstone, 1983; Gearing, 1980; Heinicke, 1984; Helfer, 1979, 1980; Hough & Stevens, 1981; Resnick, Resnick, Packer & Wilson, 1980).

While this lack of preparedness exists for both the first-time mother and first-time father, men who are trying to become involved fathers are encountering many problems: 1) the lack of successful role models, 2) a need for practical instruction about the nature of the child and experience in child care, ans 3) weak societal acknowledgement of the importance of the fathering role--resulting in almost no socialization for becoming a father for young males in our culture (Gearing, 1980).

Our research project, Information and Insights About Infants" (III) was designed to provide information support to first-time, low income, low education fathers. Capabilities of the fetus and infant as well as time tables of fetal and infant development were presented and discussed. Modelling with a life sized doll was included. Discussion promoted the concept of continuity of fetal and infant development.

Although a great many measures of family background, situational, and outcome variables are available for the

first time fathers in this research, this presentation will concentrate on 1) the informal assessment of the father's perceptions of his knowledge of newborn infant and child care, and 2) the formal assessment of the father's knowledge of when certain infant behaviors could be expected to appear.

Subjects

During the early weeks of the second trimester of their pregnancy, women were enlisted to recruit their partners, who were low-education first-time fathers. Seven recruiters were trained to approach pregnant women in two publicly supported maternity clinics, one for low-risk and one serving high-risk clients. High-risk status of expectant women was indexed by one or more of the following conditions: Hypertension, renal disease, Rh sensitization, history of two consecutive spontaneous abortions, incompetent cervix, documented active perinatal infections such as herpes, and uterine problems.

Nurses and social workers were most helpful in identifying pregnant women clients of the clinics who met two or more of the following low socioeconomic status (SES) criteria for inclusion in the project:

receives Medicaid

receives food stamps

receives pbulic assistance

receives WIC

lives in subsidized housing

The 67 fathers recruited into the project ranged in age from 19 to 35 years. They did not need to be married to be included in the sample. The father who consented, agreed, 1) to participate in prenatal/postnatal assessments, 2) to accept random assignment either to the III intervention program or to the control group, 3) to be videotaped during two ten minute feeding sessions.

Research Design

The research design involved six subgroups of fathers. Within the respective high risk and low risk clinics, fathers were randomly assigned to one of the following groups:

Group 1: High Risk Pregnancy Intervention;
Pre-Post Test (HRP I PP) n=11

Group 2: High Risk Pregnancy Comparison;
Pre-Post Test (HRP C PP) n=11

Group 3: Low Risk Pregnancy Intervention;
Pre-Post Test (LRP I PP) n=11

Group 4: Low Risk Pregnancy Comparison;
Pre-Post Test (LRP C PP) n=11

Group 5: Low Risk Pregnancy Intervention;
Post-Test Only (LRP I P) n=12

Group 6: Low Risk Pregnancy Comparison;
Post-Test Only (LRP C P) n=11

A Solomon-Postman 4-group design (Campbell & Stanley, 1966) was thus created for the low risk pregnancy fathers. During the two years of recruitment, few fathers were available in the high risk groups, and this precluded the addition of posttest only high risk groups.

Prenatal assessments were individually administered to each father by a recruiter. The intervention and postnatal assessments were carried out by the research investigator. As a gift for participation in the project, fathers were given either a toy, an article of clothing, a book appropriate for babies, or a videotape of their interactions with their infants.

Training

Fathers who participated in the III training groups did so primarily in small groups of two or three fathers. Upon occasion, if some fathers did not show up for group sessions, or were only able to attend during their partner's clinic session, the III training became a tutorial session for the father present. All training took place at the pregnancy care clinic, often during the time when the pregnant partner came for her scheduled prenatal checkup. Thus, the chance for a father to be present for the III program and to participate in the prenatal care procedures

was maximized.

Fathers experienced two 1 1/2 hour intensive training sessions. They each received an easy-to-read booklet illustrating fetal and infant development. Sessions included detailed information about the behavioral capacities of the fetus and neonate. Infant development during the first year of life was summarized. Attempts were actively made to induce intrauterine bonding of father to unborn baby. This bonding has proven successful in prenatal childbirth classes (Carter-Jessop, 1981; Cranley, 1981; Robson & Mandell, 1985; Stainton, 1985; Van de Carr & Lehrer, 1986; Weaver & Cranley, 1983).

During the training sessions, timetables for fetal, newborn and infant development were reviewed. Infant visual capabilities were emphasized. Discussions were held about ways in which fathers could elicit interactive behaviors and skills of a baby and ways in which he could tune into infant states in order to maximize infant comfort and receptivity for interaction. Responsiveness to infant cues and attentiveness to the timing of interactions to enhance responsiveness were emphasized through modelling with a life size doll. Fathers-to-be were encouraged to model with the doll. They were shown how to feed a baby a bottle, how to burp an infant, how to maintain an en face position, and how to adjust in holding a baby so that paternal postural adjustments reflect sensitivity to the changing needs of the

infant. The importance of vocalizing, warm voice tones, responsive cooing turns, smiles and focused attentiveness to infant cues was stressed (Honig, 1985). Massage, skin stroking, and cuddling were demonstrated and fathers modeled appropriate tactual, holding, and feeding interactions with the doll.

During training, infant organizational processes were specified, so that fathers-to-be became aware of fetal and infant startle patterns, attempts of both fetus and infant to self-comfort with hand-to-mouth patterns, the competence of the fetus and infant in orientation to voice and of the infant in focusing on the father's eyes when he leaned close to baby.

A variety of consoling techniques with an infant were taught. That is, crying patterns, lability of state, and irritability of newborns were discussed and soothing techniques, such as holding to shoulder, singing/crooning, massaging, rhythmic body rocking, were demonstrated.

Assessment

Father knowledge of infant (KOI) scores were determined through use of an adapted version of Epstein's (1980) Knowledge of Infant Scale. While the original scale contained 73 items, covering the needs or abilities of infants and toddlers through 24 months of age, we used only the 53 items (tested for reliability by Stevens (1983)

measuring the knowledge of infants through 12 months of age.

The recruiter read a total number of 53 cards to the respondent. Each card describes a particular ability or need of infants and the fathers are asked to sort each card according to the age at which they think the behavior described would first appear. Sorting is by approximately four-month intervals to acknowledge individual differences in development: 0-1 months, 1-4 months, 4-8 months, 8-12 months, 12-18 months and 18-24 months. The scale assesses the direction, early or late, and extent (one or more intervals) that characterize inappropriate expectations.

This Q sort type of measure is designed to yield three subscores: 1) items: correct, 2) items: number of months late and 3) items: number of months early.

Psychometric Characteristics of the Knowledge of Infant Scale

Stevens followed procedures outlined by Nunnally (1978) for establishing test reliability. These calculations were made using the responses of 433 individuals. This procedure resulted in a 53 item scale with an alpha coefficient of .883.

All 53 items reflect behaviors which emerge in most babies before the end of the first year of life. Items which were excluded tended to reflect later development.

Subscale categorization was retained. Estimates of reliability of each subscale are as follows: 1) basic care, health and nutrition (7 items Alpha=.570, 2) physical, perceptual and motor development (13 items) Alpha=.704, and 3) cognitive, social and language development (33 items) Alpha=.818 (Stevens, 1983). The motor and cognitive/social/language subscales were of sufficient length and reasonably high reliability to be useful in subsequent analysis.

The item analysis data for the shortened version is based on a modification of the original scoring procedure. A score of 100 denotes a correct response. A score of 001, 002, 003, 004, 005 denotes the response is late by the number of periods indicated in the last column (1,2,3,4,5). A score of 010, 020, 030, 040, 050 denotes that the response is early by the number of periods in the second column (1, 2, 3, 4, 5). In the revised procedure a score of 100 was assigned 2 points; 010 or 001 was assigned 1 point and 002, 003, 004, 005, 020, 030, 040, 050 was assigned a score of 0.

A modification of the original scoring procedure was designed for the purposes of this study. Items correct were assigned a score of 1. Intervals late were transformed to months late; intervals early were transformed to months early. When computing months early and months late, the highest month within the range was used for the computation, resulting in inflated estimated values for knowledge of

infant late and early scores.

Insert Table 1

Epstein (1980) reported that the more that teenage parents were late in their expectations for normative development, the less likely they were to be accurate in noting videotaped behaviors of infants.

Hypothesis

The hypothesis was that: Post-test father knowledge of infant (KOI) scores of the intervention group will be significantly higher ($p < .05$) than those of the comparison group as a function of participation in the prenatal III program, regardless of father pregnancy status, testing status, or experimental design group.

Analysis of Variance (ANOVA) was used to test the hypothesis with planned comparisons of scores of subjects from intact groups who were randomly assigned to treatment levels within the group. A 2 x 2 x 2 model included three main effect terms [1) treatment (TRT), 2) pregnancy (PREG) and 3) testing (TST)] and two interaction terms [1) TRT x PREG and 2) TRT x TST]. Since both of the HR PREG father groups (1,2) had pre-tests, the PREG x TST cell for this group = 0. This condition precluded entering PREG x TST and

any third order interactions into the model.

The term TST, with two levels [pre-post (PP) and post only (P)], was introduced into the ANOVA model as a third main effect in order to test for the effectiveness of the Solomon-Postman Four Group design, as well as to gain information on the TRT x TST interaction effect.

While the Solomon-Postman Four Group design is held in high esteem by scientists, Kerlinger (1973) points out that it has two weaknesses, one of which is statistical. While there are four actual groups, there are not four complete sets of measures. The difficulty is obtaining one overall statistical approach.

Since the LRP father groups (5,6) had only post-test scores, analysis of difference scores will be omitted. Kerlinger (1973) discusses the problems of studying and analyzing change scores with designs such as the Solomon Four Group. Analysis of Variance is effective only if the experimental effects are substantial. But he points out that the difference scores are less reliable than the scores from which they have been calculated. Cronbach and Furby (1970) recommend that change scores not be used, that the essential question is whether the intervention and comparison groups differ after group equivalency has been established on pretest scores.

Results

For KOI correct scores, significant differences were found for the treatment effect. No other main or interaction effects were found.

Insert Table 2

The treatment significantly increased the scores of the intervention group and thus the hypothesis is supported.

Even though the hypothesis did not include the post-test KOI late and KOI early scores, the analysis of those scores further substantiates the impact of the treatment as well as depicts the degree of lateness or earliness.

For post-test KOI late scores, a significant difference was found for the treatment effect. The comparison group mean score indicated that fathers judged infant behaviors to begin significantly later than those of the intervention group.

No other significant group or interaction differences were found.

Insert Table 3

The ANOVA used to test the KOI early post-test scores

yielded no significant treatment or interaction effects.

In order further to clarify the effects of the treatment on the father's knowledge of his infant, descriptive statistics of the items describing the capabilities and behaviors of the infant from birth to one month of age were generated. These items are of particular relevance to the study hypothesis, since the III program particularly emphasized the capabilities and behaviors of the unborn and the newborn up to one month of age.

The twelve items relating to knowledge of infant capabilities and behaviors from birth to one month of age are listed in Tables 4 and 5.

Table 4 lists items describing the infant's neurological alertness and physical well being (i.e. "turns head to sound ," "shows mother's care during pregnancy," "tunes into just one thing," "follows a slow bright object," "grasps a finger," "turns head and sucks on a nipple" and "puts hand in mouth to suck"). Table 5 consists of items relating to infant social capabilities and nurturing needs (i.e. "recognizes a familiar voice," "shows own personality," "needs closeness while being fed" and "quiets down when wrapped or held closely").

Insert Table 4

Insert Table 5

Each item relating to infant social capability and nurturing needs was emphasized in both the III sessions and the Where Are The Fathers? booklet. Intervention group fathers demonstrated a substantial pre to post gain on scores for these four items [1) recognizes a familiar voice T1 C=6%, I=16%; T2 C=13%, I=42%; 2) shows own personality T1 C=0%, I=2%; T2 C=6%, I=31%; 3) needs closeness while being fed T1 C=18%, I=20%; T2 C=24%, I=48%; 4) quiets down when wrapped/help closely T1 C=11%, I=11%, T2 C=15%, I=42%].

Insert Figures 1-9

These descriptive statistics of individual items of the KOI scale (Epstein, 1980), which refer to the infant needs and abilities which appear during the period from birth to one month of age, show that the I father-group scored

correctly on those items which they were able to apply to their experience with their unborn as well as their newborn children.

Discussion

A significant difference at the $p < .0001$ level was found between comparison and intervention fathers post-test knowledge of infant correct (KOI CORR) scores. That is, after the baby's birth, fathers in the intervention group more accurately pinpointed the age at which an infant ability or need could be expected to appear. Such changes have also been reported in research by Arbuckle (1984), Crummette et al. (1985), and Meyers (1982).

Prior studies supporting this significant finding have employed samples of middle class couples and have administered the post-test measures 4 - 6 weeks after the intervention. Since the III program used in this study occurred during the middle second to early third trimester of pregnancy, post-test measures in the present research were administered from 12 - 20 weeks subsequent to the intervention. Thus, the duration of retention of infant development information in this low SES group of fathers has been demonstrated for a longer period of time than for previous samples of middle SES fathers.

The capacity of the III group fathers (some of whom were unable to read, many of whom face overwhelming daily

stresses such as multiple changes of residence, family violence and lack of money to procure daily needs) to retain a body of information for a period of 12 - 24 weeks is noteworthy.

Two possible factors affecting this outcome are the timing of the intervention and the nature of the content. Information on the nature and capacities of the fetus were given in the prenatal period. Fathers were given clear information helping them to view the unborn and the newborn periods as a continuum. Fathers did not have to wait 3 to 5 months to apply a portion of the information, but were able to utilize it within the pregnancy period and as soon as the termination of the session if the mother was in the waiting room.

One explanation for the sizable increase in post-test intervention group scores compared to those of the comparison group scores may reside in the effectiveness of the III program. One important consideration is that the investigator made strong efforts to encourage the father to become aware of and responsive to the capabilities of the unborn as well as the newborn. He was informed of the unborn's unique personality and capacity to hear and respond to a familiar voice. Holding and wrapping a baby were modelled in both III training sessions.

Each item relating to infant neurological alertness and well being was also emphasized in both the III sessions and

the Where Are the Fathers? booklet. Findings seem to indicate a variation in the pattern of pre-to-post-test gains for C and I father groups.

Both C and I group fathers showed substantial pre-to-post gains on the items which were easily noticed, demanded little interpretation, were reflex in nature and which were easily recorded in memory because of the frequency with which they may have occurred [(i.e. 1) "startle at a light," 2) "puts hand in mouth to suck," 3) "grasps a finger" and 4) "turns head and sucks on a nipple"] (see Table 4).

Only intervention group fathers demonstrated substantial pre-to-post gains relating to indentification of the onset of the infants' capabilities and needs which appeared to require a knowledge base on the part of the observer which could be used as a guide in identifying and interpreting the observed behavior. The III program may have provided intervention group fathers with skills and understandings helpful both in identifying and interpreting infant behaviors from birth to one month.

Vukelich & Kilman (1985) note that the incidence of both overestimations and underestimations of development are important to understanding a father's relationship with his infant. The father who expects his infant to perform a behavior earlier than is typical may become inappropriately concerned about his infant's so-called developmental delay if the infant does not perform according to the father's

hypothesized timetables. He might, according to Davoren (1975), Feshback (1970), Jeffrey (1976), and Pollock and Steele (1972) become an abusing parent, believing his child could perform the behavior but chooses not to.

On the other hand, the father who expects a feature of development to appear substantially later than is typical may neglect to provide stimulation and environmental supports necessary for his child to develop at a normal rate.

Knowledge of norms for typical development have the potential of providing the parents with reliable criteria against which to compare their infant's development.

Pre and post-test KOI late and early scores were obtained in addition to the KOI CORR scores. A significant difference between C and I group KOI late mean scores at the $p < .05$ level (see Table 3) was found. The C group fathers were significantly later in their expectation of the first appearance of a particular ability or need of the infant. No significant group differences between KOI early group mean scores were revealed. Thus, the III program seems to have been somewhat effective in increasing paternal awareness of the abilities which their newborns could be expected to demonstrate. The III program may have increased fathers' motivation to become aware of the competencies of very young babies. Control fathers too could have used noticing skills to become aware of newborn competencies. Evidently, the

birth of the infant, per se, is not enough of an impetus to galvanize some fathers to take note of the behaviors and capacities of their newborns. Special programs may be necessary to increase observational attunements and cognitive grasp of early developmental milestones and capabilities.

The pattern of expecting too little too late from newborn babies was shown by pregnant teenagers in Epstein's (1980) study. Her comparison of correct, early, and late mean scores was similiar to the findings for the C group in this study; the number and extent of late expectations far exceeded the other two. On the other hand, early expectation scores (too much, too soon) were the lowest for both Epstein's and this study.

Crucial to a discussion of the value of increased KOI scores is not that knowledge about the infant was successfully presented to the fathers and retained by them over a relatively impressive period of time, but the impact of this knowledge of infants on father behavior while interacting with the infant. This is not to suggest that knowledge of infants is not a valuable tool in its own right. Newly acquired knowledge can impact positively on the parent's self-perception in his parental role (Gordon, 1973). However, when faced with the demands of daily interaction with a competent but needy and often demanding infant, application of knowledge to the behavioral domain

can result in sensitive behavior based upon empathy. This knowledge may enable the father to step into the infant's world, understand what might be transpiring there, empathize with what the infant is feeling and then to use his adult parental role to respond to the infant's cues with understanding, compassion and helpfulness.

Harman and Brim (1980) discuss this assumed application of knowledge and behavior. They emphasize that underlying much of parent education activity is a basic cause and effect process: Parent education brings about changes in knowledge which then affects attitudes which, in turn, have an impact upon behaviors. It is becoming more common, however, to consider both knowledge and attitudes as only two of multiple elements that determine behaviors (Ajzen & Fishbein, 1971).

Much is known about the process of acquiring knowledge. Less is known about the uses made of specific acquired knowledge. One position states that most of the parental role behavior may be acquired long before parenthood (Ahammer, 1973), presumably as a consequence of one's own experiences as a child as well as a function of early socialization (Benedek, 1970). Other theorists argue that early experience inculcates a desire to become parents rather than influencing specific aspects of the parenting role (Blake, 1974; Rapoport, Rapoport & Strelitz (1977). These theoretical stances raise several possibilities

regarding the source of child development knowledge as well as its content (Harman & Brim, 1980).

While one faces difficulties in interpreting the results of knowledge scores in relation to behavioral change scores, one cannot propose that changes in either or both categories do not constitute --in and of themselves--positive effects, even though there is inadequate evidence showing the relationship of acquired knowledge to improved behavioral practices in relating with the newborn or young child in ways which are benefical to them.

Table 1: PROCEDURE USED TO DETERMINE KOI* SCORES FOR MONTHS EARLY AND MONTHS LATE

Months	0-1	1-4	4-8	8-12	12-18	18-24
	.0	+3	+7	+11	+17	+23
	-3	.0	+4	+8	+14	+20
	-7	-4	.0	+4	+10	+16
	-11	-8	-4	.0	+6	+12

0 = item is correct

+ = number of months late [ie. an item describing a behavior beginning between 0-1 months could be 0=correct, +3=(4-1), +7=(8-1), +11=(12-1), +17=(18-1) or +23=(24-1)]

- = number of months early

* KOI: Knowledge of Infants

Abstract

Pregnant women, in two clinics, one serving "low-risk" and the o
serving "high risk" pregnancies, helped to recruit their male partn
a prenatal program. The 67 men, first-time fathers, all of low
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p
=.0001) than those of the comparison group.

Table 2: HY 3Aa: COMPARISON OF POST-TEST KNOWLEDGE OF INFANT CORRECT SCORES USING AN ANALYSIS OF VARIANCE TECHNIQUE

Source of Variance	df	MS	f	p*
Treatment	1	810.94	17.46	.0001
Pregnancy	1	44.00	0.95	.33
Pretest	1	35.15	0.76	.39
Treatment by Pregnancy	1	5.82	0.13	.72
Treatment by Pre-Test	1	55.54	1.20	.28
Error (Within)	61	46.44		

* SAS Program calculates exact probability.

Table 3: HY 3Ba: COMPARISON OF POST-TEST KNOWLEDGE OF INFANT LATE SCORES USING AN ANALYSIS OF VARIANCE TECHNIQUE

Source of Variance	*df*	*MS*	*f*	*p**
Treatment	1	26.37	4.15	.05
Pregnancy	1	9.42	1.48	.23
Pretest	1	5.44	0.86	.35
Treatment by Pregnancy	1	0.69	0.11	.74
Treatment by Pre-Test	1	1.07	0.17	.68
Error (Within)	61	6.35		

* SAS Program calculates exact probability.

Table 4: BY 3's CORRECT RESPONSES TO POST-TEST KNOWLEDGE OF INFANT ITEMS

Birth to one month, relating to neurological alertness and physical well being.

	Comparison				Intervention			
	Pre		Post		Pre		Post	
	n=22		n=33		n=22		n=34	
Item	f	%	f	%	f	%	f	%
1. turns head to sound	2	4.55	8	11.94	2	4.55	25	37.31
2. shows mother's care during pregnancy	14	31.82	22	32.84	8	18.18	26	38.81
3. tunes into one thing	2	4.55	5	7.46	0	0.00	22	32.84
4. follows a slow bright object	1	2.27	6	8.96	0	0.00	19	28.36
5. startles at a light	1	2.27	25	37.31	0	0.00	30	44.78
6. grasps finger	2	4.55	20	29.85	4	9.09	24	35.82
7. turns, sucks on nipple	9	20.45	28	41.79	11	25.00	29	43.28
8. puts hand in mouth to suck	3	6.82	20	29.85	5	11.36	26	38.81

* Each KOI item could be answered 1) correctly, 2) a range of months late or 3) a range of months early (see Appendix J).

Table 4: BY SE CORRECT RESPONSES TO POST-TEST KNOWLEDGE OF INFANT ITEMS

birth to one month, relating to social capabilities and nurturing needs

	Comparison				Intervention			
	Pre		Post		Pre		Post	
	n=22		n=33		n=22		n=34	
Item	f	%	f	%	f	%	f	%
1. recognizes a familiar voice	3	6.82	9	13.43	7	15.91	28	41.79
2. shows own personality	0	0.00	4	5.97	1	2.27	21	31.34
3. needs closeness while being fed	8	18.18	16	23.88	9	20.45	32	47.76
4. quiets down when wrapped/ held closely	5	11.36	10	14.93	5	11.36	28	41.79

* Each KOI item could be answered 1) correctly, 2) a range of months late or 3) a range of months early (see Appendix).

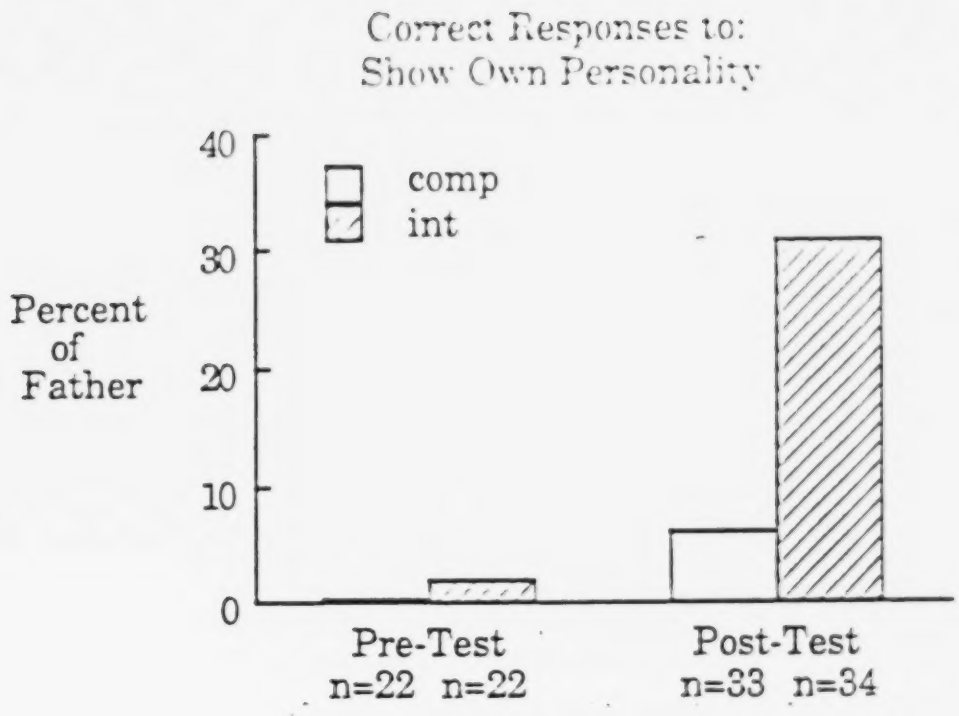

FIGURE 1

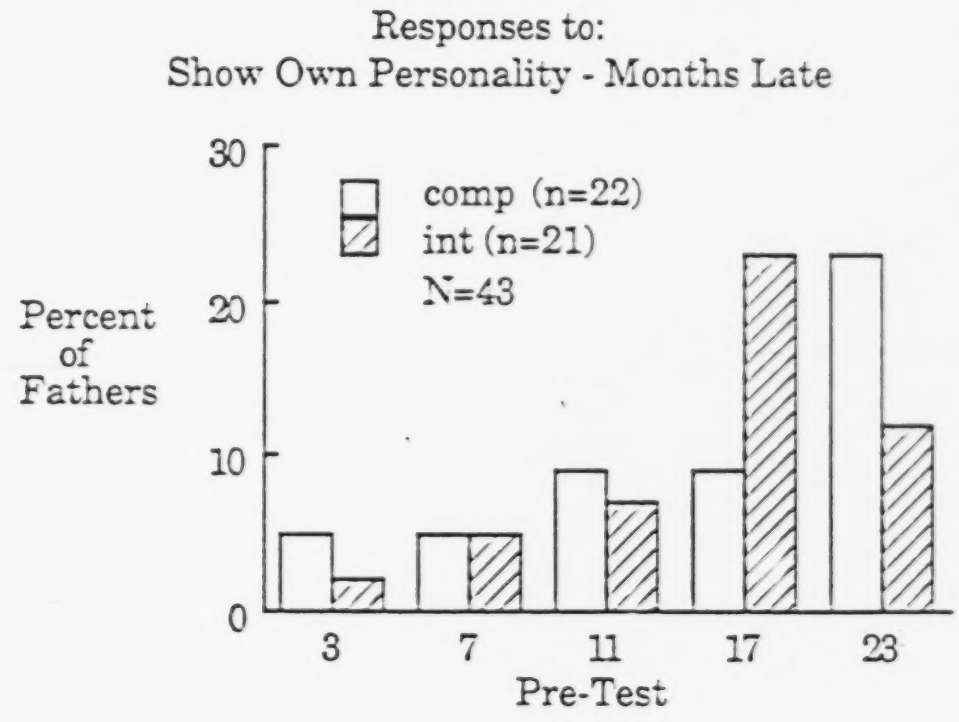

FIGURE 2

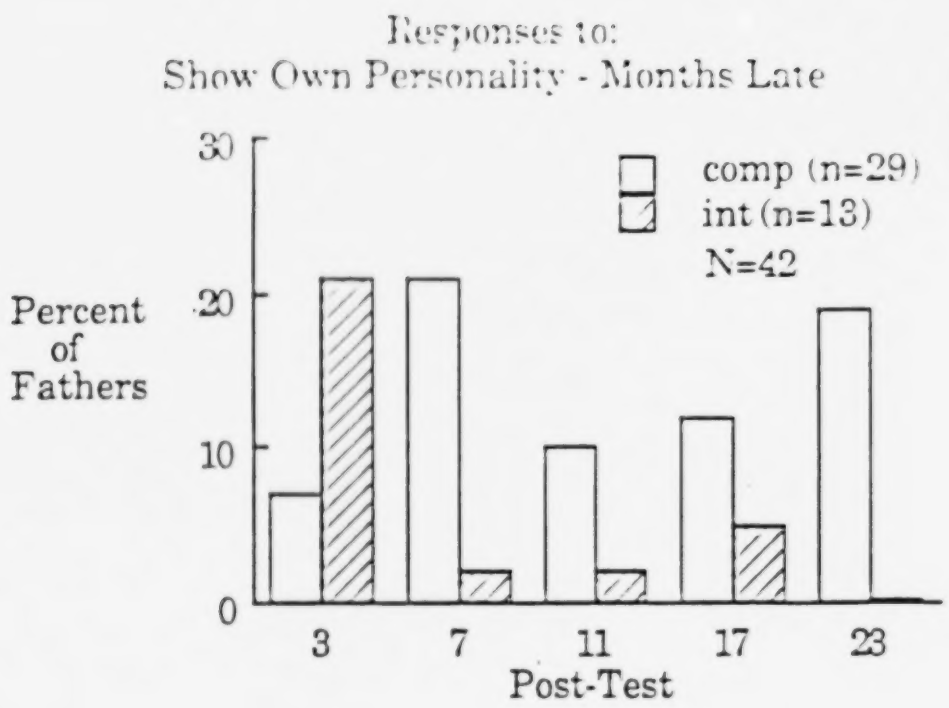
Responses to:
Show Own Personality - Months Late
comp (n=29)
int (n=13)
N=42
Percent of Fathers
30
20
10
0
3
7
11
17
23
Post-Test

FIGURE 3

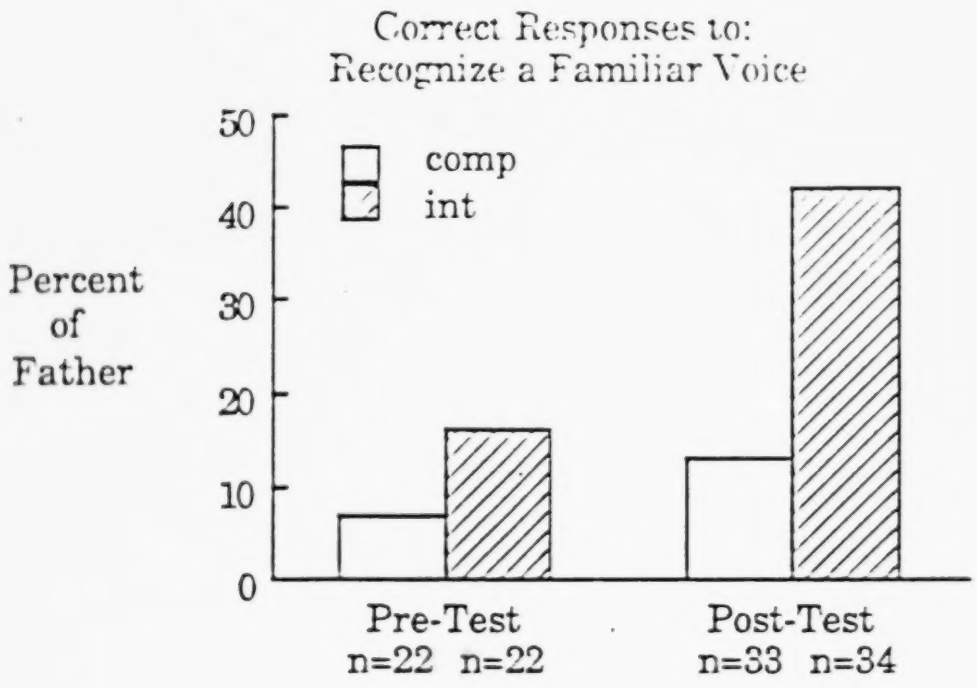

FIGURE 4

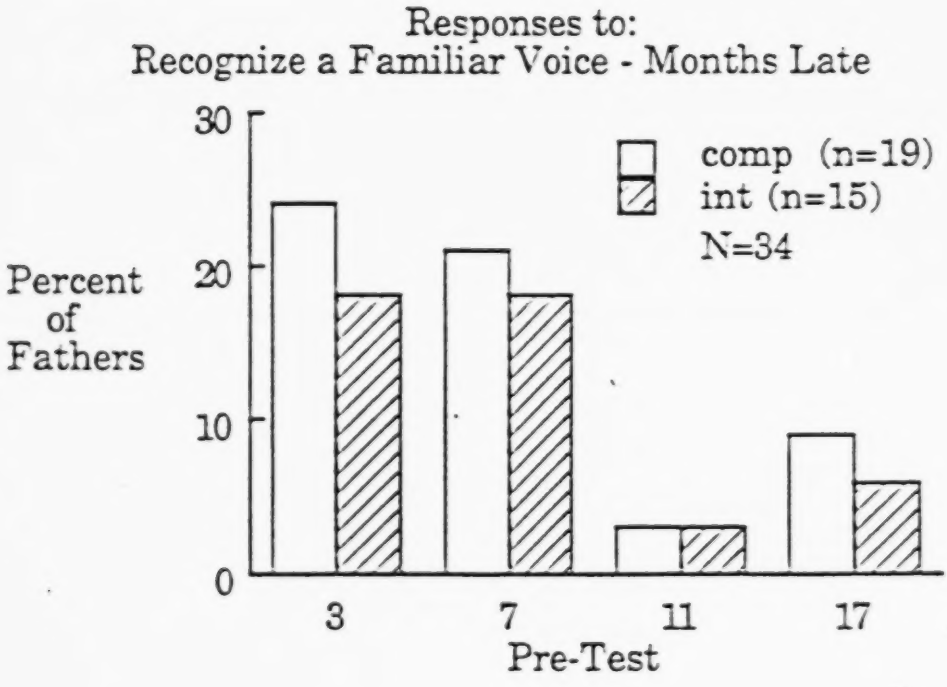

FIGURE 5

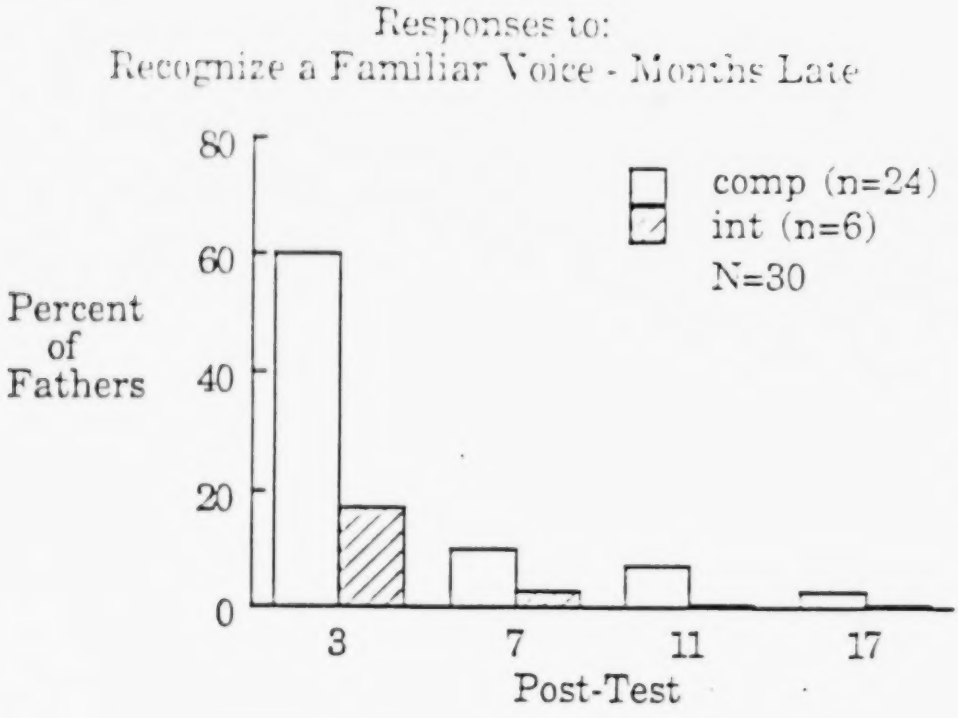
Responses to:
Recognize a Familiar Voice - Months Late
Percent of Fathers
80
60
40
20
0
comp (n=24)
int (n=6)
N=30
3
7
11
17
Post-Test

FIGURE 6

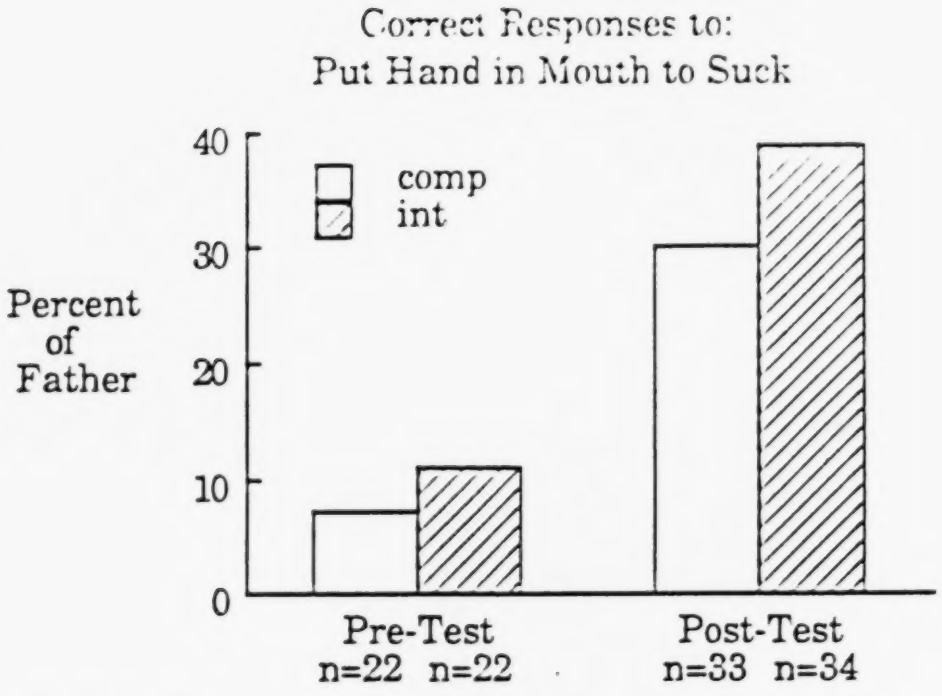

FIGURE 7

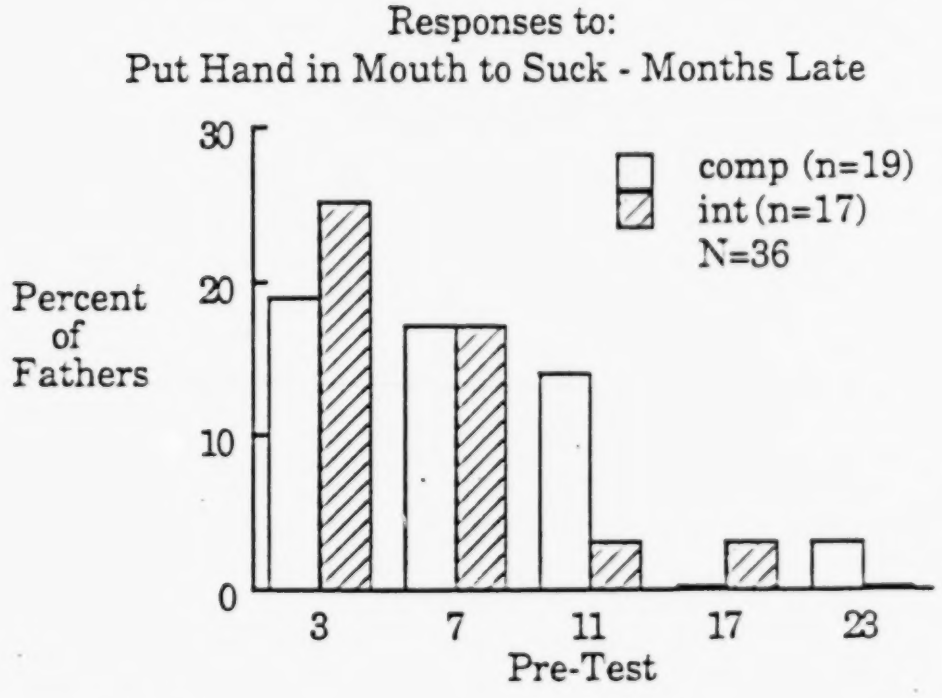

FIGURE 8

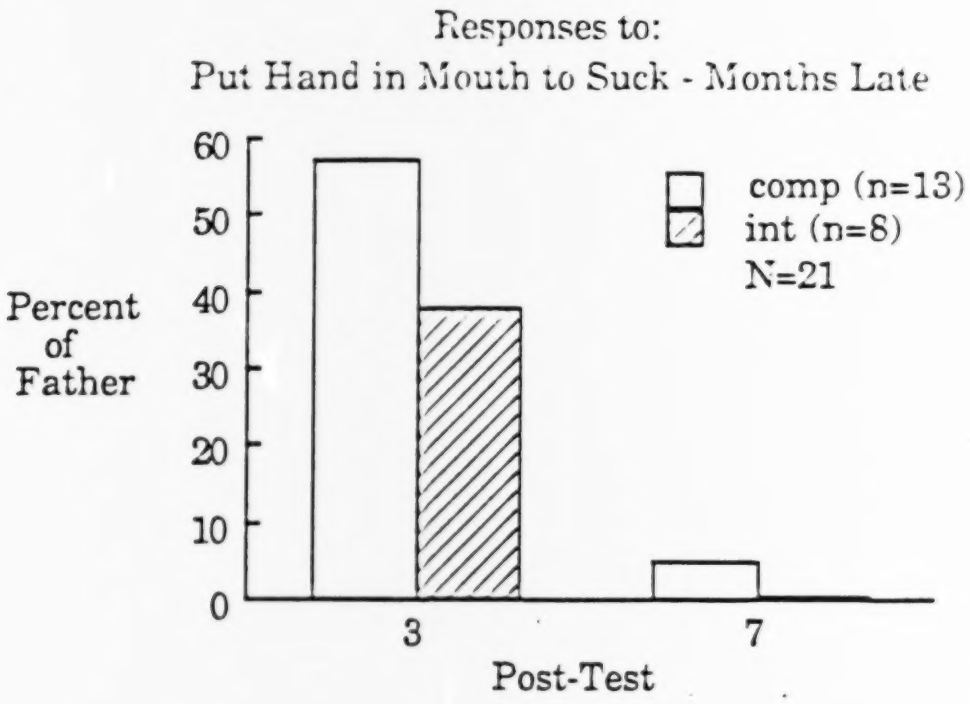
Responses to:
Put Hand in Mouth to Suck - Months Late
Percent of Father
60
50
40
30
20
10
0
comp (n=13)
int (n=8)
N=21
3
7
Post-Test

FIGURE 9

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